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AUTHOR Feldman, Robert S.; Allen, Vernon L.
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ABSTRACT

Recent evidence suggests that the use of children acting as tutors for their peers may prove beneficial to the tutor as well as to the tutee. There is now abundant, unsubstantiated anecdotal evidence, and some controlled experimental work, which suggests that the tutor benefits greatly from his involvement in teaching. The enactment of the role of "teacher" by a child may explain the positive effects for the tutor. The role demands of teaching require a mastery of the materials to be taught. Thus it is likely that some kind of restructuring of material occurs when a person enacts the role of teacher. This role enactment may be particularly beneficial for low-achieving children. Tutoring may lead to increased motivation and learning for the tutor. This experiment examines the hypothesis that low-achieving children learn better when placed in the role of teacher than when studying alone. It is also expected that the tutee will benefit from tutoring; however, it is likely that the tutor will benefit as much as or more than the tutee. (Author/WS)

LEARNING THROUGH TUTORING: LOW-ACHIEVING CHILDREN AS TUTORS[1]

Robert S. Feldman and Vernon L. Allen
University of Wisconsin-Madison

Introduction

The use of children acting as tutors for their peers has long been thought to be a useful method for increasing learning in the tutee. However, recent evidence suggests equally important effects may accrue to the child who is enacting the role of teacher--the tutor. There is now abundant, unsubstantiated anecdotal evidence, and some controlled experimental work, which suggests that the tutor benefits greatly from his involvement in teaching.

A role theoretical analysis of the tutor-tutee interaction suggests that enactment of the role of "teacher" by a child may explain the positive effects for the tutor. When placed in the role of teacher, it is necessary to assume an entirely different point of view from that of a student. Above all, the role demands of teaching require a mastery of the material to be taught. It is thus likely that some kind of restructuring of material occurs when a person enacts the role of teacher.

The benefits of role enactment may be particularly potent for low-achieving children, who have a record of failure and who tend to be passive participants in any learning exchange. Tutoring may thus lead to increased motivation and learning for the tutor. The present experiment examines the hypothesis that low-achieving children learn better when placed in the role of teacher than when studying alone. It is also

expected that the tutee will benefit from tutoring; however, it is likely that the tutor will benefit as much as--or more than--the tutor.

Method

Subjects

Tutors. Subjects who acted as tutors were 10 low-achieving fifth-graders whose reading scores were at least one year below grade level. Eight subjects were males and two were females. Each subject was paid $10 for participating in ten 45-minute sessions held over a two-week period during summer vacation. Three subjects were dropped from the final analysis, one due to failure to complete all sessions and the remaining two for failure to follow the instructions.

Tutees. Subjects acting as tutees were 10 randomly-selected third-graders, eight males and two females. Each subject was paid $10 for participation in the experiment. Tutees were assigned to one same-sex tutor for the two-week period. Data from three tutees were not included in the analysis because their corresponding tutor was dropped.

Materials

Ten different lessons were prepared, each designed to be studied for approximately 20 minutes. There were four lessons on language, four on science, and two on reading topics. In all cases, the lessons included some brief written exercises.

A 10-minute test was prepared for each lesson, based on the specific lesson content. Separate scores were calculated for each test based upon the number of questions the subject answered correctly. Scores were standardized by lesson and grade to remove differences due to item and

test variability and difficulty. The test scores served as the dependent measure.

Procedure

Overview. Subjects participated for ten consecutive weekdays for a two-week period. For every alternate day, the fifth-grade tutor either taught a third-grade tutee for 20 minutes (Tutoring Condition) or spent an equivalent period of time studying the material alone (Study Alone Condition). For the tutors, each session was preceeded with a period of time in which the material for the day's lesson could be studied.

The younger children were either taught the day's lesson by their tutor (Tutoring Condition) or spent the same amount of time studying the material independently (Study Alone Condition). At the conclusion of each day's lesson, both the older and younger child were given the test on content of the materials covered in that session.

Tutors (fifth-graders). At the start of the experiment, fifth-graders were told that on five of the 10 days they would be "junior teachers" and would teach a lesson to a younger child. Subjects were told that they would be similar to a "regular teacher," except that they would be teaching on a one-to-one basis. They were informed that on alternate days, when they would not be teaching, they would simply learn the lessons by themselves. They were told whether they were to teach or study alone before receiving the lesson materials for that day.

Each session began with eight minutes of individual study of the materials of the day's lesson. The tutor was then given three minutes to organize orally the material from memory. During this time, the subjects' verbalizations were recorded on an audio tape recorder. Immediately

following this period, the subject either taught the lesson for a 20-minute period (Tutoring Condition) or studied the material alone (Study Alone Condition) for 20 minutes. Subjects were given complete freedom in organizing their tutoring sessions. At the end of the 20-minute session, subjects were given the 10-minute test on the day's lesson.

Tutees (third-graders). Third-grade subjects were told at the beginning of the experiment that on alternate days they would either be taught by an older child (Tutoring Condition) or would study a lesson independently (Study Alone Condition). In the Tutoring Condition, subjects were taught by their tutor for 20 minutes; in the Study Alone Condition, subjects were simply given the material and told to learn it by themselves for the 20-minute period. At the end of each 20-minute session they were given the same test as administered to the fifth-grade subjects.

Design

Each subject's participation in the five Tutoring Condition sessions and five Study Alone Condition sessions was analyzed using a repeated measures design over the five daily sessions. Each subject thus acted as his own control.

Results

Tutors (fifth-graders)

An analysis of variance was performed on the fifth-grade standardized test scores. Results showed an interaction between condition (Teaching or Studying Alone) and practice over the series of five sessions ($F = 4.41$, $p < .08$). Neither condition nor practice main effects were significant.

An examination of the condition means presented in Table 1 shows that subjects in the Tutoring Condition performed somewhat better overall than in the Study Alone Condition. Moreover, in the first session studying alone showed somewhat better results than tutoring, but this was reversed over time so that by the last sessions the tutoring condition was superior to studying alone. Orthogonal comparisons between the Tutoring and Study Alone Conditions by session disclosed a significant difference at session four ($F = 5.07$, $p < .04$) and at session five ($F = 4.53$, $p < .05$). Therefore, by the end of the two-week period, tutoring resulted in significantly better performance than studying alone for the low-achieving fifth-grade subjects.

Tutees (third-graders)

Overall scores for third-graders were slightly higher when they were taught by the older child than when they studied alone (see Table 1). This overall difference did not, however, approach significance in an analysis of variance. As with the fifth-graders, there was an interaction between condition and practice over sessions ($F = 3.75$, $p < .10$). Performance in the Tutoring Condition showed a slight decrement over time while performance in the Study Alone Condition improved somewhat with practice. Interestingly, this trend is in the opposite direction of that of the fifth graders over time. However, orthogonal comparisons between the Tutoring and Study Alone Condition by session failed to show a significant difference between the two conditions at any one of the five sessions. Thus, it made little difference in the performance of the third graders whether they were taught by an older child or whether they studied the material alone.

Comparison of Third and Fifth Graders

A close examination of the performance of the tutors and tutees over sessions and by condition indicates that there was a relatively greater change in scores from the first session to the last session for the fifth graders than for the third graders. This difference was significantly greater for the tutors than for the tutees ($p < .025$). Thus, the tutors' performance from the start of the two-week period to the last session appears to have changed significantly more than the tutees' performance, indicating that the differential effect of tutoring and studying alone was more potent for the tutors than the tutees.

Discussion

Results of the experiment support the hypothesis that acting as a tutor for a younger child is a useful technique for enhancing the academic performance of low-achieving children. Over a period of two weeks, tutors performed increasingly well when they were in the role of tutor, while performance dropped over the period when they studied the material alone. Moreover, by the last two sessions, performance in the Tutoring Condition surpassed the level of any previous performance in either of the two conditions. It thus appears that as the tutors became more skilled in the enactment of the role of teacher, they became more successful in learning when they taught than when they studied alone.

Although performance of the tutees changed somewhat over time, performance was not significantly related to whether the tutee was taught or studied alone. Overall, the tutees scored only slightly higher on

the tests when they were tutored than when they studied the material alone. Furthermore, the change in performance from the first to the last session was significantly greater for the tutors than for the tutees.

It seems, then, that enactment of the role of teacher by a low-achiever is a useful method of increasing learning. These results are not limited necessarily to low-achievers; it is likely that one may safely generalize to other, more academically-successful students. However, the effects of teaching on the tutor may be most dramatic in cases where the student has a history of failure using traditional pedagogical methods.

Table 1

Standardized Scores for Academic Performance when Studying Alone Versus Tutoring for Tutors and Tutees

Tutors

	Session					
	1	2	3	4	5	Mean
Tutoring	-.208	+.008	+.014	+.451	+.357	+.125
Studying Alone	+.217	+.007	-.013	-.444	-.348	-.116

Tutees

	Session					
	1	2	3	4	5	Mean
Tutored	+.201	+.257	-.153	-.024	-.157	+.025
Studying Alone	-.188	-.255	+.158	+.028	+.161	-.019

Footnote

[1] Presented at the Annual Meeting of the Midwestern Psychological Association, Cleveland, Ohio, May, 1972.

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